

540

DART AEROSPACE LTD	Work Order:	24136
Description: Blade	Part Number:	D2741
04.03.03 18 UP		
Drawing: D2741 Rev. B2	Qty:	20 17

Step	Location	Procedure	By	Date	Qty
1	EXPEDITING	Issue Work Order	AK	05/09/06	20
2	METAL	Cut blanks 13.850" long +0.063" -0.000" Material: 4130 steel bar 0.50" x 3.00" Batch: M17494	S	05/09/09	17
3	CNC CELL	Machine per folio FA108	JL	05-09-27	17
4	QC	Inspect Level 2	JL	05-09-27	17
5	QC	Inspect Level 8	JL	05/10/25	17
6	METAL	Deburr	J.L	05/10/25	17
7	METAL	Bend per Dwg D2741	SD	05.10.25	17
8	QC	Inspect Level 5	J	05-10-25	17
9	PURCHASING	Issue P/O: 700886 Harden material as per Dwg D2741 Min. Ultimate Tensile Strength = 152 ksi (34-40 HRC) Min. Yield Tensile Strength = 141 ksi Test report or Certification required	U	05-10-28	17
10	RECEIVING	Receive and Inspect for transit damage Ensure Test report or Certification attached	J	05/11/09	17
11A	QC	Inspect Level 5	J	05/11/09	17
12	FINISHING	Powder Coat White (Ref. 4.3.5.2) per QSI 005 4.3	ML	05/11/14	17
13	QC	Inspect Level 3	CL	05/11/14	17
14	STORES	Identify and stock LOC: 153	J	05/11/14	17
15	EXPEDITING	Close W/O Cost / part 56.16 545 05-11-19 (17)			

Rev	Date	Change	Revised By	Approved
A	98.09.10	New Issue	DS/CP	
B	99.03.22	Material hardened after counterbore	DM	
C	00.11.01	Removed P/O for Powder Coat - in house process	EC	
D	00.11.15	Removed P/O turning - in house process	EC	

116 | FP | grind D2741 smooth and free of carbon

05/11/11 | 17

RELEASED

EC 00.11.20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			
05/10/12	3	One blank was short resulting in shorter blade. This resulted in 0.715" dim BEING 0.683". The surface at that end is unmachined	UP	PART IS NOT ACCEPTABLE, GRIND SURFACE THE LEAST POSSIBLE TO REMOVE ROUGH SURFACE	gml 05/10/25	2 05-10-25	UP 05.10.13 per QSI 042	2 05-10-12
05/09/19	2	miss material to complete Qty 20	VB 05/12	Qty 17		2 05-10-25	VB 05/12	2 05.10.25

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ ☐ Date: 05/11/18

NOTE: Date & initial all entries

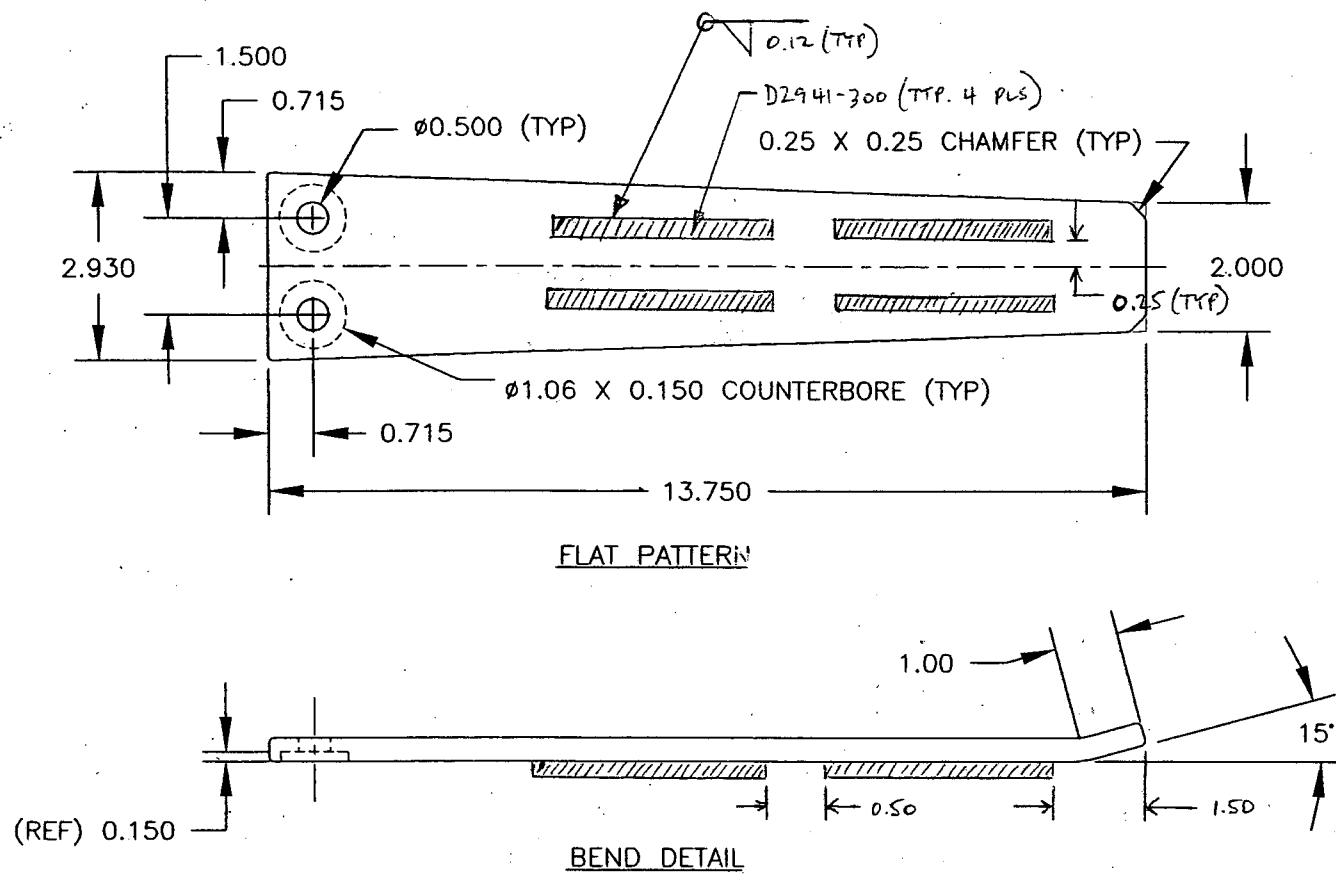
QA: N/C Closed: _____ Date: _____

DART

QA CONTROL

RELEASED
98-11-03 DS

DESIGN	FAIRCHILD INTERNATIONAL AIRPORT, WA	DART AEROSPACE USA, INC.	REV. B
CHECKED	APPROVED	DRAWING NO.	SHEET 1 OF 1
DATE	TITLE	SCALE	
98.09.01	BLADE	1:3	
A	98.04.16	NEW ISSUE	
B	98.09.01	CHANGE C'SINK TO C'BORE	
B1	01.01.31	ADD 2941-041/-043 OPENINGS	
B2	01.02.25	ADD ROCKWELL HARDNESS	



MATERIAL: AISI 4130 STEEL 0.375 THICK
 MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
 MIN. YIELD TENSILE STRENGTH = 141 ksi
 FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
 TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
 BREAK ALL SHARP EDGES 0.030 TO 0.060

#01.01.31
 #01.01.31
 TO MAKE D2741-041, WELD 2941-300 (4) AS SHOWN ABOVE. REMOVE POWDER COAT FROM SURFACE OF D2941-300
 TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

NO. 21/30
 WORK ORDER
 UNCONTROLLED COPY
 SUBJECT TO FOUNDMENT
 WITHOUT NOTICE
 SHOT COPY
 RETURN TO
 ENGINEERING

Job Costing Report

Dart Aerospace Ltd.
Hawkesbury

Sep 01, 2005
10:48 am

Work Order No : 0024136
Project Name : D2741
Project For : WK540
Work Order Type : Main.
Main WO Number :
House Part Number : D2741
Description : Blade
Manufactured : Yes
Amount Req'd : 20
Amount Done : 0
Start Date : 08-29-05
Est Finish Date : 09-30-05
Act Finish Date :
Drawings Req'd : No
Ok for Approval :
Approval Rec'd :

Department Code:
Burden Flags : NNNNNNNN
WO Status : Open
Invoice State : Not Invoiced
Invoice Date :
Invoice Number :
Invoice Amount : 0.00
Order Entry No :
OE Value : 0.00
Est Mark Up : 0.000%
Actual Mark Up : 0.000%
\$0 Posted to Finished Goods

	Estimated	Actual	Var. %	Posted	To Post
Material Cost :	0.00	0.00	0.00	0.00	0.00
Engineering Hours :	0.00	0.00	0.00		
Engineering Cost :	0.00	0.00	0.00	0.00	0.00
Production Hours :	0.00	0.00	0.00		
Production Cost :	0.00	0.00	0.00	0.00	0.00
Packaging Hours :	0.00	0.00	0.00		
Packaging Cost :	0.00	0.00	0.00	0.00	0.00
OverHead Hours :	0.00	0.00	0.00		
OverHead Cost :	0.00	0.00	0.00	0.00	0.00
CNC Hours :	0.00	0.00	0.00		
CNC :	0.00	0.00	0.00	0.00	0.00
Misc. Hours :	0.00	0.00	0.00		
Misc. :	0.00	0.00	0.00	0.00	0.00
Burden :	0.00	0.00	0.00		
Total Cost :	0.00	0.00	0.00		
Mark up :	0.000	0.000			
Selling Cost :	0.00	0.00			

	Estimated	Actual
Labour Hrs/Amount Done :	0.00	0.00
Profits/(Loss)	0.00	0.00

Chris Provencal

From: David Shepherd [davids@dartaero.com]
Sent: October 13, 2005 1:37 PM
To: Chris Provencal
Subject: Re: D2741 Blade problem

Chris,

I think 0.683 is an acceptable deviation. I would grind the unmachined surface to remove the rough surface.

David

----- Original Message -----

From: "Chris Provencal" <cprovencal@dartaero.com>
To: <davids@dartaero.com>
Sent: Wednesday, October 12, 2005 10:51 AM
Subject: D2741 Blade problem

> David,

>

> They made one D2741 Blade (stinger for 350 skidtube) using material that was

> too small. Basically, the 0.715 dimension on the dwg is 0.683. The surface

> at the end is also unmachined, ie. rough.

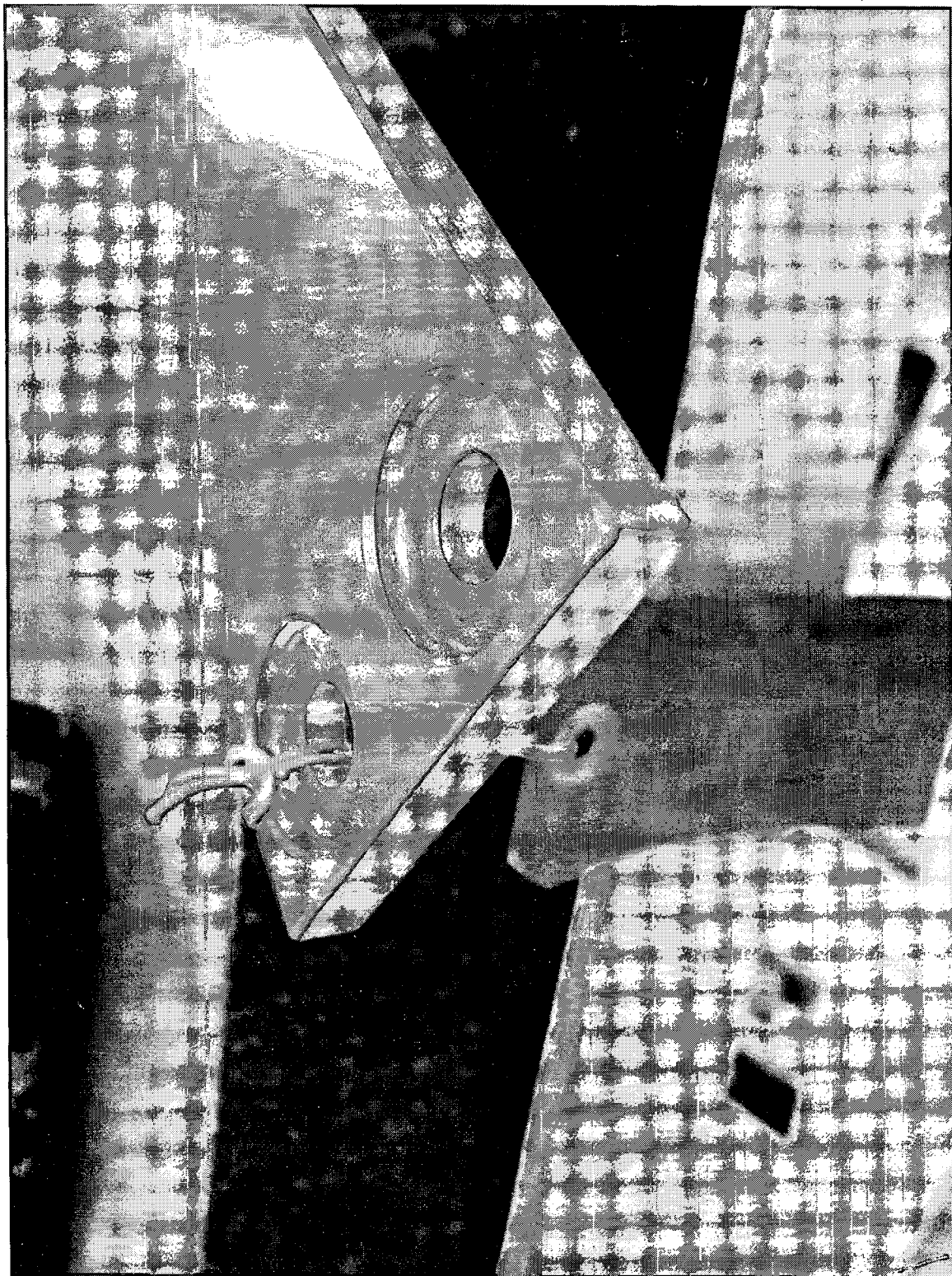
>

> Is this acceptable?

>

> -Chris

>





VAC AERO
INTERNATIONAL INC.

RELEASE NOTE

GST No.: R105468102

OAK 69453-1



HEAD OFFICE
1371 SPEERS ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7489



2009 WYECROFT ROAD, UNIT B
OAKVILLE, ONTARIO
CANADA L6I 6J4
TEL: (905) 827-7377 FAX: (905) 827-1380



QUEBEC DIVISION
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

11/07/2005

MM / DD / YYYY

PAGE : 1

1DAR01

BILL TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
11/07/2005		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
2008861		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
D2741	BLADE	EA	17	17	
<p>Process Specifications: Procedure: 4161 HARDENED PER DWG. D2741 REV. B2 TO 152 KSI MINIMUM HRC 34-40 MATERIAL: 4130</p> <p>B24136 P/S: 23527</p> <div>100% HARDNESS TESTED 17 pcs → 37/38 HRC</div> <div>V.I.O. TH. 27 Q.C.</div>					

I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

Authorized Q.C. Inspector



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS



Job Costing Report

Dart Aerospace Ltd.
Hawkesbury

Nov 08, 2005
11:04 am

Work Order No : 0024136
Project Name : D2741
Project For : WK540
Work Order Type : Main
Main WO Number :
House Part Number : D2741
Description : Blade
Manufactured : Yes
Amount Req'd : 20
Amount Done : 0
Start Date : 08-29-05
Est Finish Date : 09-30-05
Act Finish Date :
Drawings Req'd : No
Ok for Approval :
Approval Rec'd :

Department Code:
Burden Flags : NNNNNNNN
WO Status : Open
Invoice State : Not Invoiced
Invoice Date :
Invoice Number :
Invoice Amount : 0.00
Order Entry No :
OE Value : 0.00
Est Margin : 0.000%
Actual Margin : 0.000%
\$0 Posted to Finished Goods

	Estimated	Actual	Var. %	Posted	To Post
Material Cost :	0.00	0.00	0.00	0.00	0.00
Engineering Hours :	0.00	0.00	0.00		
Engineering Cost :	0.00	0.00	0.00	0.00	0.00
Production Hours :	0.00	19.50	100.00		
Production Cost :	0.00	326.41	100.00	0.00	326.41
Packaging Hours :	0.00	0.00	0.00		
Packaging Cost :	0.00	0.00	0.00	0.00	0.00
OverHead Hours :	0.00	0.00	0.00		
OverHead Cost :	0.00	0.00	0.00	0.00	0.00
CNC Hours :	0.00	15.00	100.00		
CNC :	0.00	0.00	0.00	0.00	0.00
Misc. Hours :	0.00	0.00	0.00		
Misc. :	0.00	0.00	0.00	0.00	0.00
Burden :	0.00	0.00	0.00		
Total Cost :	0.00	326.41	100.00		
Margin :	0.000	0.000			
Selling Cost :	0.00	326.41			

	Estimated	Actual
Labour Hrs/Amount Done :	0.00	0.00
Profits/(Loss) :	0.00	(-326.41)

Mis o/B
u
11.13

Date: Monday, 14/11/2005 8:36:17 AM
 User: Alba Panzuto

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: BLADE
Job Number	: 24136		
Estimate Number	: 10327		
P.O. Number	:	Part Number	: D2741
This Issue	: 14/11/2005	S.O. No.	:
Prsht Rev.	: NC	Drawing Number	: D2741 REV B2
First Issue	: / /	Project Number	:
Previous Run	: 24750	Drawing Revision	: B2
	Type	Material	:
	: MACHINED PARTS	Due Date	: 30/11/2005
Written By	:	Qty:	20
Checked & Approved By	:	Um:	Each
Comment	: Est D 00.11.15 Removed P/O turning - in house process E C		

Additional Product

Job Number:



*MIS+COSS
job completion*

Seq. #: Machine Or Operation:

1.0 M4130NB0500X03000 4130 Ba.

2.0 BAND SAW BAND SA



Comment: BAND SAW

Cut blanks 13.850" long +0.063" -0.000"

3.0 HAAS1 HAAS CNC VERTICAL MACHINING #1



Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine per folio FA108

4.0 QC2 INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

5.0 QC8 SECOND CHECK



Comment: SECOND CHECK

6.0 SMALL FAB 1 SMALL & MEDIUM FAB RESOURCE 1



Comment: SMALL & MEDIUM FAB RESOURCE 1

1-Deburr

2-Bend per Dwg D2741

Date: Monday, 14/11/2005 8:36:17 AM
User: Alba Panzuto

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BLADE

Job Number: 24136

Part Number: D2741

Job Number:



Seq. #:

Machine Or Operation:

Description :

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

8.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O: _____

Harden material as per Dwg D2741

Min. Ultimate Tensile Strength = 152 ksi (30-40 HRC)

Min. Yield Tensile Strength = 141 ksi

Test report or Certification required

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive and Inspect for transit damage

Ensure Test report or Certification attached

10.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

11.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.2) as per QSI 005 4.3

12.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

13.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

Date: Monday, 14/11/2005 8:36:17 AM
User: Alba Panzuto

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BLADE

Job Number: 24136

Part Number: D2741

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL
Inspection Level 21

Job Completion

